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EXAMINER

ADAMS, CHARLES D

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/766,305	<b>Applicant(s)</b> BOHANNON ET AL.	
	<b>Examiner</b> CHARLES D. ADAMS	<b>Art Unit</b> 2164	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Remarks*

1. In response to communications filed on 4 January 2008, claims 6-7, 10-11 are amended. Claims 1-19 are pending in the application.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 10, 12, 15-16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barsalou et al. ("Updating Relational Databases through Object-Based Views") in view of Tatarinov et al. ("Updating XML").

As to claim 1, Barsalou et al. does not explicitly teach if an update to an XML document can be reflected in an underlying relational database.

Tatarinov et al. teaches if an update to an XML document can be reflected in an underlying relational database (see Section 6, page 418),

Barsalou et al. as modified teaches wherein said XML document is comprised of a tree of nodes (see Barsalou et al. section 2, page 249 and Tatarinov et al. sections 3 and 3.1, page 414), said method comprising the steps of:

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Assigning at least one of a plurality of categories to each of said nodes, wherein said plurality of categories are based on a cardinality relationship indicated by one or more correlation predicates and one or more foreign key constraints in said underlying relational database (see Barsalou et al. page 255, column 2, “Validation Against the Structural Model”. Foreign key constraints are used. Also see page 249, “The Structural Model”, and page 253, column 1); and

Determining whether said update to said XML document can be reflected in said underlying relational database based on said assigned category (see Barsalou et al. page 253, section 5 “Updating through View Objects”. Updates require local validation against the view-object definition and global validation against the structural model).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Tatarinov et al., since Tatarinov et al. teaches that “clearly, in order to fully evolve XML into a universal data representation and sharing format, we must allow users to specify updates to XML documents and must develop techniques to process them efficiently” (see Abstract).

As to claim 4, Barsalou et al. as modified teaches further comprising the step of determining an update execution strategy based on said assigning category (see Barsalou et al. page 253, column 2, paragraph 1).

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As to claim 10, Barsalou et al. teaches wherein said update is a deletion of a referenced peninsula (RP) root-node that is permitted only when a foreign key of a parent node does not appear in the view as a leaf node and wherein said update execution strategy comprises the step of setting the foreign key values in an element base view of a direct parent of said RP root-node to NULL (see Barsalou et al. page 249, definition 2.3 and page 253, section 5.1).

As to claim 12, Barsalou et al. does not teach a system for determining if an update to an XML document can be reflected in an underlying relational database,

Tatarinov et al. teaches a system for determining if an update to an XML document can be reflected in an underlying relational database (see Section 6, page 418),

Barsalou et al. as modified teaches wherein said XML document is comprised of a tree of nodes (see Barsalou et al. section 2, page 249 and Tatarinov et al. sections 3 and 3.1, page 414), comprising:

A memory (see Tatarinov et al. page 421, section 7); and

At least one processor, coupled to the memory (see Tatarinov et al. page 421, section 7), operative to:

Assign at least one of a plurality of categories to each of said nodes, wherein said plurality of categories are based on a cardinality relationship indicated by one or more correlation predicates and one or more foreign key constraints in said underlying relational database (see Barsalou et al. page 255,

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column 2, "Validation Against the Structural Model". Foreign key constraints are used. Also see page 249, "The Structural Model", and page 253, column 1); and

Determine whether said update to said XML document can be reflected in said underlying relational database based on said assigned category (see Barsalou et al. page 253, section 5 "Updating through View Objects").

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Tatarinov et al., since Tatarinov et al. teaches that "clearly, in order to fully evolve XML into a universal data representation and sharing format, we must allow users to specify updates to XML documents and must develop techniques to process them efficiently" (see Abstract).

As to claim 15, Barsalou et al. teaches wherein said processor is further configured to determine an update execution strategy based on said assigning category (see Barsalou et al. page 253, column 2, paragraph 1).

As to claim 16, Barsalou et al. does not teach an article of manufacture for determining if an update to an XML document can be reflected in an underlying relational database,

Tatarinov et al. teaches an article of manufacture for determining if an update to an XML document can be reflected in an underlying relational database (see Section 6, page 418),

Barsalou et al. as modified teaches wherein said XML document is comprised of a tree of nodes (see Barsalou et al. section 2, page 249 and Tatarinov et al. sections 3 and 3.1, page 414), comprising a machine readable medium containing one or more programs which when executed implement the steps of:

Assigning at least one of a plurality of categories to each of said nodes, wherein said plurality of categories are based on a cardinality relationship indicated by one or more correlation predicates and one or more foreign key constraints in said underlying relational database (see Barsalou et al. page 255, column 2, "Validation Against the Structural Model". Foreign key constraints are used. Also see page 249, "The Structural Model", and page 253, column 1); and

Determining whether said update to said XML document can be reflected in said underlying relational database based on said assigned category (see Barsalou et al. page 253, section 5 "Updating through View Objects").

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Tatarinov et al., since Tatarinov et al. teaches that "clearly, in order to fully evolve XML into a universal data representation and sharing format, we must allow users to specify updates to XML documents and must develop techniques to process them efficiently" (see Abstract).

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As to claim 19, Barsalou et al. teaches wherein said processor is further configured to determine an update execution strategy based on said assigning category (see Barsalou et al. page 253, column 2, paragraph 1).

4. Claims 2-3, 5, 7-9, 13-14, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barsalou et al. ("Updating Relational Databases through Object-Based Views") in view of Tatarinov et al. ("Updating XML"), and further in view of Wiederhold et al. "A structural model for Database Systems".

As to claims 2, 13, and 17, Barsalou et al. teaches wherein the plurality of categories includes overlap island (see page 253, definition 5.1)

Barsalou et al. does not explicitly teach wherein the plurality of categories includes dependency continent,

Wiederhold et al. teaches wherein the plurality of categories includes dependency continent (see page 9, section 3.3.1),

Barsalou et al. teaches and referenced peninsula categories (see page 253, definition 5.2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Wiederhold et al., since Wiederhold et al. teaches a variety of relationships among relational objects that was well known in the art, and Barsalou et al. teaches testing update validity based on relationships among relational objects. It would have been obvious to one of ordinary skill in the art to have included



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further known classes of relationships to test for in Barsalou et al. In addition to this, Wiederhold et al. teaches that “Relational concepts are well known, but for conciseness we now define relations and relation schemes as we use them in the structural model” (see section 3.2, page 6).

As to claim 3, 14, and 18, Barsalou et al. teaches the claim upon which this claim is dependent.

Barsalou et al. does not teach wherein said plurality of categories includes transitive archipelago and pseudo transitive archipelago categories.

Wiederhold et al. teaches wherein said plurality of categories includes transitive archipelago (see section 3.3.3, pages 10-11) and pseudo transitive archipelago (section 3.3.5, page 12) categories.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Wiederhold et al., since Wiederhold et al. teaches a variety of relationships among relational objects that was well known in the art, and Barsalou et al. teaches testing update validity based on relationships among relational objects. It would have been obvious to one of ordinary skill in the art to have included further known classes of relationships to test for in Barsalou et al. In addition to this, Wiederhold et al. teaches that “Relational concepts are well known, but for conciseness we now define relations and relation schemes as we use them in the structural model” (see section 3.2, page 6).

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As to claim 5, Barsalou et al. as modified teaches the method of claim 4.

Barsalou et al. does not explicitly teach wherein said update is a deletion of a branch dependency continent (DC) node and

Wiederhold et al. teaches wherein said update is a deletion of a branch dependency continent (DC) node (see page 10, 1<sup>st</sup> paragraph) and

Barsalou et al. as modified teaches:

wherein said update execution strategy comprises the steps of:

Deleting the corresponding tuple in an element base view (see Tatarinov et al. page 419, 6.1.2 and Wiederhold et al. page 10); and

Propagating the deletion recursively to all branch dependency continent-children of the deleted branch DC node (see Tatarinov et al. page 419, 6.1.2; and Wiederhold et al. page 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Wiederhold et al., since Wiederhold et al. teaches a variety of relationships among relational objects that was well known in the art, and Barsalou et al. teaches testing update validity based on relationships among relational objects. It would have been obvious to one of ordinary skill in the art to have included further known classes of relationships to test for in Barsalou et al. In addition to this, Wiederhold et al. teaches that “Relational concepts are well known, but for conciseness we now define relations and relation schemes as we use them in the structural model” (see section 3.2, page 6).

As to claim 7, Barsalou et al. teaches the method of claim 4.

Barsalou et al. does not teach wherein said update is a movement of a branch dependency continent (DC) node

Wiederhold et al. teaches wherein said update is a movement of a branch dependency continent (DC) node (see page 10, 1<sup>st</sup> paragraph)

Barsalou et al. as modified teaches that is permitted only when a foreign key in the node to be moved does not itself appear in a view as a leaf node and wherein said update execution strategy comprises the step of setting foreign-key values in an element base view of the DC-node to the key values of a new direct parent of said DC-node (see Wiederhold et al. page 17, #1(c) and Barsalou et al. page 249, Definition 2.2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Wiederhold et al., since Wiederhold et al. teaches a variety of relationships among relational objects that was well known in the art, and Barsalou et al. teaches testing update validity based on relationships among relational objects. It would have been obvious to one of ordinary skill in the art to have included further known classes of relationships to test for in Barsalou et al. In addition to this, Wiederhold et al. teaches that “Relational concepts are well known, but for conciseness we now define relations ad relation schemes as we use them in the structural model” (see section 3.2, page 6).

As to claim 8, Barsalou et al. teaches the method of claim 4.

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Barsalou et al. does not teach wherein said update is a deletion of a leaf DC-node

Wiederhold et al. teaches wherein said update is a deletion of a leaf DC-node (see Wiederhold pages 16-17, section 3.5.1)

Barsalou et al. teaches that is permitted only when the node does not correspond to a foreign key appearing in correlation predicates and wherein said update execution strategy comprises the step of setting a corresponding attribute in an element base view to NULL (see Wiederhold pages 16-17, section 3.5.1 and see Barsalou et al. page 249, definition 2.3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Wiederhold et al., since Wiederhold et al. teaches a variety of relationships among relational objects that was well known in the art, and Barsalou et al. teaches testing update validity based on relationships among relational objects. It would have been obvious to one of ordinary skill in the art to have included further known classes of relationships to test for in Barsalou et al. In addition to this, Wiederhold et al. teaches that “Relational concepts are well known, but for conciseness we now define relations and relation schemes as we use them in the structural model” (see section 3.2, page 6).

As to claim 9, Barsalou et al. teaches the method of claim 4.

Barsalou et al. does not teach wherein said update is an insertion of a leaf DC-node

Wiederhold et al. teaches wherein said update is an insertion of a leaf DC-node

Barsalou et al. as modified teaches that is permitted only when the leaf DC-node does not correspond to a foreign key appearing in correlation predicates and wherein said update execution strategy comprises the step of assigning a value to the corresponding attribute in an element base view (see Wiederhold et al. page 17, #1(c) and Barsalou et al. page 249, Definition 2.2)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Barsalou et al. by the teaching of Wiederhold et al., since Wiederhold et al. teaches a variety of relationships among relational objects that was well known in the art, and Barsalou et al. teaches testing update validity based on relationships among relational objects. It would have been obvious to one of ordinary skill in the art to have included further known classes of relationships to test for in Barsalou et al. In addition to this, Wiederhold et al. teaches that “Relational concepts are well known, but for conciseness we now define relations and relation schemes as we use them in the structural model” (see section 3.2, page 6).

### ***Allowable Subject Matter***

5. Claims 6 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

6. Applicant's arguments filed 4 January 2008 have been fully considered but they are not persuasive.

Applicant argues that "Barsalou et al., however, does not disclose or suggest assigning at least one of a plurality of categories to each of said nodes, wherein said plurality of categories are based on a cardinality relationship indicated by one or more correlation predicates and one or more foreign key constraints in said underlying relational database" and "Applicants can find no disclosure or suggestion in Barsalou et al. of assigning at least one of a plurality of categories to each of said nodes, wherein said plurality of categories are based on a cardinality relationship indicated by one or more correlation predicates and one or more foreign key constraints in said underlying relational database".

In response to this argument, Examiner notes that on page 249, section 2, Barsalou et al. discusses "The Structural Model". It defines a reference as a connection between two relations, wherein every tuple in a first relation must either be connected to a referenced tuple in a second relation or have null values. As  $R_1$  and  $R_2$  are different from one another, they are 'foreign'. It also mentions constraints wherein deletions of referenced tuples from foreign relations require deleting or nullifying referencing tuples. Similar relationships can be found in other definitions in section 2 (2.1, 2.2, and 2.4). Barsalou et al.

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mentions assigning categories based on such relationships in page 253, definitions 5.1 and 5.2. It is noted that a “dependency island” must contain “exclusively ownership” and “subset connections”. These are examples of both correlation predicates and foreign key constraints.

In response to the argument that Barsalou et al. does not disclose or suggest “determining whether said update to said XML document can be reflected in said underlying relational database based on said assigned category”, Examiner notes that Barsalout et al. page 253, section 5 “Updating through View Objects” teaches this, as indicated above.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES D. ADAMS whose telephone number is (571)272-3938. The examiner can normally be reached on 8:30 AM - 5:00 PM, M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. D. A./  
Examiner, Art Unit 2164

/Charles Rones/  
Supervisory Patent Examiner, Art Unit 2164